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TECHNICAL REPORT

No 102-AC 49-15-100

AF180273

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Unidentified Objects
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UNIDENTIFIED FLYING OBJECTS

Project "GRUDGE"

Release Date
August 194

HEADQUARTERS AIR MATERIEL COMMAND

WRIGHT-PATTERSON AIR FORCE BASE

DAYTON, OHIO

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Technical Report

No. 102-AC 49/15-100

UNIDENTIFIED FLYING OBJECTS
PROJECT "GRUDGE"

Lt H. W. Smith
Mr. G. W. Towles

Project No. XS-304

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ABSTRACT

A Technical Intelligence Report covering the method of investigation of unidentified flying objects and results obtained to date is presented.

The report discusses in full the history of the project, the problems encountered, and the procedures followed in the investigation and evaluation of reports of unidentified flying objects. Since the project is continuous in nature, this report comprehensively treats reports of sightings only up to January 1949. Work is continuing on later reports.

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FOREWORD

The following individuals and agencies served as consultants in the investigation and evaluation of unidentified flying objects:

1. Dr. J. A. Hynek, Ohio State University -- was under contract from 16 December 1948 to 30 April 1949, Contract No. AF 33 (038)-1118
2. Hq, Air Weather Service, Washington 25, D. C.
3. Dr. G. E. Valley, Scientific Advisory Committee
4. Rand Corporation, 1500 Fourth Street, Santa Monica, Calif.
5. 3160th Electronics Laboratory, Cambridge Field Station, Mass.
6. Dr. P. M. Fitts, Air Materiel Command Aero-Medical Laboratory
7. Weather Bureau, U. S. Department of Commerce

In addition, technical sections of the Analysis and Engineering Divisions, Air Materiel Command, were available for consultation when needed.

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INTRODUCTION

This report may be considered as final for the period reported upon. It also indicates the probable future trends of reports of unidentified flying objects.

In gathering and evaluating material for the report, it was found, and will be seen, that the conclusions evolve without effort. No attempt has been made to force evidence into a pattern that was not clearly indicated.

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SUMMARY

While there are approximately 375 incidents on record, only incidents Nos. 1 thru 244 are encompassed in this report. Of the later incidents, many have not yet been investigated, few have been completely tabulated, and none have been submitted to the consulting agencies. It is certain that better over-all results will be obtained in the analysis of the later reports, as these incidents generally have been more completely investigated.

Since 5 December 1948, a series of recurring phenomena described as "green fireballs" have been reported in the general vicinity of Albuquerque, New Mexico. Dr. Lincoln La Paz, noted meteoritic expert, has been directly, though unofficially, associated with the investigation of these sightings and has himself observed the phenomena. Dr. La Paz states he is convinced the green fireballs are not ordinary meteors. This group of incidents has little or nothing in common with other incidents on file with Project "Grudge", therefore, these incidents are not considered in this report. The Scientific Advisory Committee was asked to investigate this matter and had advised that an independent investigation be conducted in the field of atmospheric research.

Upon eliminating several additional incidents due to vagueness and duplication, there remain 228 incidents which are considered in this report. Thirty of these could not be explained, because there was found to be insufficient evidence on which to base a conclusion.

Consulting agencies provided plausible solutions for 164 incidents, along with the following comments and findings:

Rand Inc. — (172 Incidents considered) "We have found nothing which would seriously controvert simple rational explanations of the various phenomena in terms of balloons, conventional aircraft, planets, meteors, bits of paper, optical illusions, practical jokers, psychopathological reporters, and the like."

Ohio State University (Dr. Hynek - 244 Incidents considered) Assuming evidences of observers and investigators to be correct, Dr. Hynek concluded that 32% could be explained astronomically, 35% could be attributed to balloons, aircraft, rockets, birds, etc., and 33% either lacked necessary evidence or a suitable explanation was not apparent. When due allowance was made for inaccuracies in observing and reporting, 53% might be explained astronomically.

Air Weather Service (233 Incidents considered)

12.0% apparently were weather balloons.

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Air Materiel Command Aero-Medical Laboratory (Dr. Paul M. Fitts - 212 Incidents considered)

There are sufficient psychological explanations for the reports of unidentified flying objects to provide plausible explanations for reports not otherwise explainable. These errors in identifying real stimuli result chiefly from inability to estimate speed, distance, and size.

All of the remaining 34 incidents are treated in detail in this report. These incidents form no pattern in regard to area of sighting, type of object, or manner of performance. There are indications, however, that some sightings were influenced by earlier reports, and probably would not have been considered unusual or reported had there been no publicity.

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CONCLUSIONS

1. Evaluation of reports of unidentified flying objects to date demonstrate that these flying objects constitute no direct threat to the national security of the United States.

2. Reports of unidentified flying objects are the result of:

a. Misinterpretation of various conventional objects.

b. A mild form of mass hysteria or "war nerves".

c. Individuals who fabricate such reports to perpetrate a hoax or to seek publicity.

d. Psychopathological persons.

3. Planned release of unusual aerial objects coupled with the release of related psychological propaganda could cause mass hysteria.

a. Employment of these methods by or against an enemy would yield similar results.

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RECOMMENDATIONS

1. That the investigation and study of reports of unidentified flying objects be reduced in scope.

a. That current collection directives relative to unidentified flying objects be revised to provide for the submission of only those reports clearly indicating realistic technical applications.

2. That Conclusions 1 and 2 of this report, with sufficient supporting data, be declassified and made public in the form of an official press release.

3. That psychological Warfare Division and other governmental agencies interested in psychological warfare be informed of the results of this study.

a. That such agencies coordinate in and provide further recommendations for public release of material as recommended in Para. 2 above.

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FACTUAL DATA

I. Foreign Reports

During the summer of 1946, there were reported to have been seen in Sweden a number of mysterious aerial objects. There were as many different descriptions for the "ghost rockets", as the newspapers tagged them, as there were observers. It soon became quite common for newspapers in Sweden and in the U. S. to refer authoritatively to these objects as guided missiles with the inference that they were test flights from Russia or Russian-dominated areas. The "ghost rockets" were usually seen in hours of darkness, almost always traveling at extremely high speed; shaped like a ball or projectile; bright or incandescent blue, white, red, green, or yellow; sometimes had an associated noise; and were always seen at too great a distance to observe details. By the end of the summer, 1946, an occasional report came out of Denmark, Norway, Spain, Greece, Fr. Morocco, Portugal, and Turkey. Throughout 1947 and 1948, "ghost rocket" reports totalled less than a dozen. None have been received within the past 6 months. These reports reached the public through the press and the radio, they reached the government of the U. S. through Military Attache reports. Attaches had obtained virtually all of their information from European press and radio items.

The Swedish Defense Staff conducted a comprehensive study of the early incidents. Several thousand reports were thoroughly investigated and plotted, with resultant conclusions that all evidence obtained of sightings were explicable in terms of astronomical phenomena. Since that time, although the Swedes themselves show little concern, they attempt to play up their incidents to the United States, obviously to emphasize their request for radar (see Appendix "A").

II. Early American Reports

The first American report of unidentified objects to receive wide publicity and to cause some national concern was that of Kenneth Arnold of Boise, Idaho. Arnold described the objects as "saucer-like discs" and this is evidently the origination of the much-used terms "flying saucers" and "flying discs". This incident is Number 17 in the project files. The date of sighting is given as 24 June 1947. Arnold's story appeared in many newspapers throughout the country. He even wrote a series of articles about this sighting for "Fate" magazine. This periodical styles itself a "cosmic reporter" and delves into the supernatural and fantastic.

Within the month following Arnold's report, the number of incidents reached a peak that remained unsurpassed for any like period covered by this report. (This peak was, however, surpassed in May 1949, following an Air Force press release and a series of articles in the Saturday Evening Post concerning flying objects. A few individuals later reported having seen objects prior to the Arnold incident.

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Since August 1947 until the present, except May 1949 as noted above, the number of reports maintained a monthly average of approximately twelve, with occasional up-surges often directly attributable to an unusual or overly publicized report.

III. Air Force Cognizance of Unidentified Aerial Objects

In September 1947, the Air Force was forced to take official cognizance of the "flying discs" because of increasing demand from the public for an explanation, and as a result of certain publications persisting in using a sensational approach in reporting such items, and often implying that something subversive, dangerous, and fearful was upon us.

Hq. AMC in a letter dated 23 September 1947, requested the Commanding General, Army Air Forces, to issue a directive assigning a priority, security classification and code name for a detailed study of flying disc reports. Hq. AMC explained that their action was based on the opinion that the phenomena reported appeared to be real. Awaiting a specific directive, Hq. AMC collected information on flying disc incidents in order to more clearly define the nature of the phenomena. On the 22nd of December 1947, in a memorandum, "Analysis of Flying Disc Reports", the Director of Intelligence, Hq. USAF, concurred with AMC recommendations and forwarded them to the Director of Research and Development, DCS/M, Hq. USAF, for reply to the Commanding General, AMC. In a letter dated 30 December 1947, the Director of Research and Development, DCS/M, advised the Commanding General, AMC, that Air Force policy was not to ignore reports of sightings and phenomena in the atmosphere. To implement this policy, AMC was directed by Hq. USAF, to set up a project with the purpose of collecting, collating, evaluating, and distributing to interested government agencies and contractors, all information concerning sightings and phenomena in the atmosphere which might be construed to be of concern to the national security. This directive assigned a priority of 2A to the project, a RESTRICTED classification and a code name of "Sign". (The code name of "Sign" for the project was changed to "Grudge" by a 16 December 1948 request of the Director of Research and Development, DCS/M. "Grudge" under the U.S. Joint Services code word index refers to the title "Detailed Study of Flying Discs".) As a result of the directive from Hq. USAF for establishment of the special project, Hq. AMC Technical Instruction No. 2185, dated 11 February 1948, was published and assigned responsibility for the project activities to the Technical Intelligence Division, Intelligence Department, Hq. AMC.

Department of Air Force and Department of Army letters directed all respective subordinate units to report directly to Air Materiel Command all information concerning unidentified flying objects. Air Intelligence Requirements Memorandum No. 4 was published 15 February 1949 at the request of Air Materiel Command in an effort to obtain more comprehensive and accurate information.

IV. Project Administration

At the outset, project personnel proceeded by air to the scene of a reported sighting to personally interrogate witnesses. This was not

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entirely satisfactory, due to the fact that the number of personnel available was not sufficient to cover each report adequately and have time for recording and analyzing material collected. Furthermore, it was learned that project personnel could not be well enough versed in all the technological and scientific fields involved in this study to efficiently execute all phases of this work. Therefore, in September 1948 the method of operation of the project was revised. Enough experience had been gained to make it evident that a large proportion of disc reports arose from sightings of unfamiliar objects and failure to recognize known objects for what they were. The course then became apparent. It has since been the endeavor to have adequate investigations of all reports, systematic tabulation of all information, and analysis of information by competent technical personnel in all branches of science and engineering into which the reported object may conceivably fall. In this way misrepresented and generally unfamiliar objects, hoax makers, and psychopathological reporters may be identified, and these reports eliminated from the study. With these out of the way, the succeeding steps would develop.

In implementing the above plan, the following general procedure was established and followed:

A. Receipt of Initial Reports

1. Personal letter and personal contact.

2. Newspaper clippings and radio news broadcasts.

3. Reports from military and naval installations, (as a result of official directives; these make up the largest bulk of reports).

B. Investigation of Reports

1. A few reports are investigated by Headquarters, Air Materiel Command personnel, ATI field teams or project personnel.

2. When a sighting involves only military personnel, especially in out-of-the-way locations, local base intelligence officers are requested to investigate.

3. The largest number of reports are investigated by the appropriate CSI District, by request through 5th District CSI.

4. All investigators are instructed to use AMC form titled, "Guide to Investigation Unidentified Flying Objects" to assure collection of all available, pertinent information. The Guide to Investigation is frequently revised to incorporate recommendations of technical consultants to the project.

C. Recording of Information After Receipt of Report of Investigation

1. Upon completion of investigation, the reported sighting is then treated as an incident and assigned a consecutive number.

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Its location and configuration is then plotted. Statistical graphs are brought up to date.

2. Information for locating and comparing is recorded on card files by witness, and on a tabular sheet for convenient study.

3. Pertinent information is extracted, condensed, and compiled on an Incident Summary Sheet, which is similar to the first two pages of the Guide to Investigation.

4. Entire incident files are microfilmed, in order that technical consultants will have access to all available information if desired.

5. Data is collated against monthly blimp flight reports, Airline schedules, information on ball lightning, and other known aerial objects.

4. Consultants

Since, as stated above, there were indications that some sightings could be attributed to natural phenomena, conventional aircraft and aerial vehicles, birds, lights, clouds, etc., effort was made to have all material analyzed by individuals in all technical fields that might conceivably be touched upon. These individuals and agencies include the following (only those agencies which provided usable results are considered):

1. Dr. J. A. Hynek, Astronomer, Ohio State University, was awarded a contract, effective 16 December 1948 to 30 April 1949, for the purpose of attempting to determine which reported objects might be attributed to natural celestial phenomena.

2. Headquarters Air Weather Service was requested to review each incident to determine those which may have been weather balloons by comparison of release and weather data with time of sighting, description of object, and its maneuvers.

3. Dr. G. E. Valley, Scientific Advisory Board. Since many reporters colored their reports with talk of ray, electronic beams, and magnetic support and propulsion, Dr. Valley was asked to analyze the incidents and decide whether this could possibly be the case in any instance, and to provide information on this matter.

4. Rand Corporation was requested to analyze each incident and provide any reasonable explanation that could be determined from the evidence given. Rand also provided a discussion of the possibility of visitations by beings from other planets.

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5. 3160th Electronics Laboratory, Cambridge Field Station, studied all incidents by comparing evidence with research balloon data, to determine which incidents may be attributed to various types of research balloons.

6. Dr. P. M. Fitts, Psychologist, AMC Aero-Medical Laboratory was requested to review all material relative to sightings and to provide psychological and illusory information and determine human capacity for observing and remembering minute details of range, speed, size, etc.

While these analyses were being conducted, the Swedish Defense Staff was contacted through our Air Attache to learn the official Swedish attitude toward the "ghost rockets". The results of these requests are contained in AA Reports, No. IR-115-48, 30 December 1948, and No. IR-47-49, 2 March 1949 (listed as Appendix "A").

V. Discussion of Reports of Consulting Agencies

A. Dr. J. A. Hynek, Final Report (see Appendix "B"). Dr. Hynek's report includes the results of a concentrated study of all files up to an including Incident No. 244. However, as mentioned above, Incidents 223 through 227 and 241 through 244, in the New Mexico area, will not be considered in this analysis. An additional seven incidents were excluded by Dr. Hynek as explained in his Summary on Page 4 of Appendix "B". Of the remaining 228 then treated, Dr. Hynek concluded that approximately 33% were astronomical with varying degrees of probability. He concluded that an additional 37% were not astronomical but suggestive of other explanations, such as birds, rockets, balloons, ordinary aircraft, etc. The remaining 30% as far as Dr. Hynek was concerned either lacked sufficient evidence or evidence offered suggested no explanation. In compiling these statistics, Dr. Hynek cautiously accepted each case at face value, without discounting evidence that sometimes "verged on the ludicrous" and without taking into consideration psychological factors. Dr. Hynek then stated that "53% might conceivably be considered (although the likelihood of their being so may be very small) as extra-terrestrial or astronomical in origin". These include "those which either are definitely astronomical or can by suitable manipulation of the evidence be construed as such".

B. Hq, Air Weather Service, one indorsement and one letter (see Appendix "C") Air Weather Service conducted an analysis simultaneously with Dr. Hynek using the same evidence. AWS attempted to determine whether a synoptic weather balloon could have been at the location where a sighting was reported.

In this investigation consideration was given to the wind direction and speed at the surface and aloft at the scheduled time of balloon release, and the location of the nearest weather station making balloon observations. AWS used files of the first 233 incidents.

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These include five of New Mexico fireballs and the seven incidents that duplicated others or had no information. Therefore, 221 incidents are considered here. Of these, AWS concluded that 31 incidents could have been synoptic balloons, four of these were incidents that Dr. Hynek could not explain. In addition, AWS determined that ten more incidents could be attributed to astronomical phenomena. A discrepancy is noted in that, of the 31 which AWS concluded were balloons, Dr. Hynek has listed six as possible meteors. In the remaining 25, AWS and Dr. Hynek were in close agreement.

NOTE: The project files contain listing of over 200 weather stations within the U.S.A. A conservative estimate of balloon releases by these stations alone would number well over 500 per day.

C. Dr. G. E. Valley, General Study (Appendix "D"). Dr. Valley was requested to review all reports (Incident No. 1 thru 172 incl.) and provide any possible explanation. At the same time, he considered the possibility of supporting and propelling a solid object by unusual means. (It will be noted that Dr. Valley's theories along these lines very closely parallel those of J. E. Lipp, Rand Corporation, Appendix "E".)

D. Rand Corporation, letter, 13 December 1948, and letter, 29 March 1949 (Appendix "E"). Rand provided a discussion of the special design and performance characteristics that are believed to distinguish space ships. Rand received files on Incidents No. 1 thru No. 233 for general analysis. Although the final report from Rand has not yet been received, Rand reported, in a letter (Appendix "E") based on study of the first 172 incidents, "to date, we have found nothing which would seriously controvert simple rational explanations of the various phenomena in terms of balloons, conventional aircraft, planets, meteors, bits of paper, optical illusions, practical jokers, psychopathological reporters, and the like."

E. 3160th Electronics Laboratory, Cambridge Field Station (Appendix "F"). The Electronics Laboratory reviewed Incidents No. 1 thru No. 172 to determine whether any may have been sightings of special research balloons. The Laboratory showed that 18 could possibly have been their balloons. Dr. Hynek's analysis did not conflict with any of these, and in some cases served as slight confirmation. However, of the 18, three were thought to have been synoptic balloons. It was learned while obtaining this information, that numerous universities and laboratories are engaged in various types of research requiring the use of balloons. Even when the balloons are recovered, there is no certain way of determining their exact path.

F. Dr. P. M. Fitts, Air Materiel Command Aero-Medical Laboratory (Appendix "G"). Dr. Fitts studied 212 incidents from a psychological point of view and concluded "that there are sufficient psychological explanations for the reports of unidentified objects to provide

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plausible explanations for reports not otherwise explainable." Review of Dr. Fitt's report reveals that this conclusion is warranted, despite its presumptuous sound. Dr. Fitts provided plausible explanations in six specific reports, one agreed with AWS, four agreed with Dr. Hynek, and one Dr. Hynek could not explain and AWS did not mention.

C. U. S. Department of Commerce Weather Bureau (Appendix "H").

The Weather Bureau provided much information on the phenomenon of ball lightning and lightning in general. These phenomena cannot be ruled out entirely. However, none of the recorded incidents appear to have been lightning.

VI. Summary of Results of Consultants

It can be stated with certainty that unidentified objects are many different types of objects and not multiple sightings of the same object or the same type object.

It is realized that none of the explanations given constitute positive scientific proof. Such proof might be possible were fragments recovered or were damage to property or injury to personnel sustained in any instance. On the other hand, almost every incident has less than legal proof that an object was seen, or that an object appeared or performed as described. Even in those cases where more than one witness reported, all witnesses seldom agreed on details.

In view of the foregoing, the explanations provided by consulting agencies are accepted as solutions to the respective incidents.

Of the 228 incidents under consideration in this report, 30 must be disregarded for lack of workable evidence. Eight were extracted from press and radio accounts and are hardly more than rumors. In the investigation of five others, the observers were found to have possessed too vivid imaginations, were of low intelligence, or were morally questionable. It is reasonable to assume that if these thirty incidents had contained sufficient information a proportionate number could be explained as were the 164 incidents that have been explained.

With 194 incidents thus eliminated, there remain thirty-four which contain some evidence but have no apparent ready explanation. This statement is true only under the assumption that the evidence is accepted as reliable and accurate. When psychological and physiological factors are taken into consideration, all of these incidents can be explained rationally, as pointed out by Rand Corporation and Dr. Fitts of Air Materiel Command Aero-Medical Laboratory (see Appendixes "E" and "G").

VII. Summary of AMC Evaluation of Remaining Reports

The remaining unexplained incidents (see Appendix "I") exhibited few common characteristics. Two of them, by statements of the reporters, would not have been made had the witnesses not read of the Mt. Ranier

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incident (Incident No. 17). Most were distributed without pattern throughout the United States. A few were outside the U. S. No two descriptions of appearance or performance were exactly alike. The reported sightings occurred at various times of day and year.

VIII. Relationship Between Publicity and Dates of Reports

The following graph (Fig. 1) illustrates an apparent relationship between reports which received wide publicity and the total number of reports. It is believed this has been carried to a sufficient degree to allow the conclusion that many reports are the direct result of such publicity.

This was further illustrated recently, when this Command received 64 reports of sightings and 51 possible solutions following a Saturday Evening Post article and an official press release on the subject of flying objects. Virtually all of the reporters and correspondents made reference to one of the above mentioned articles.

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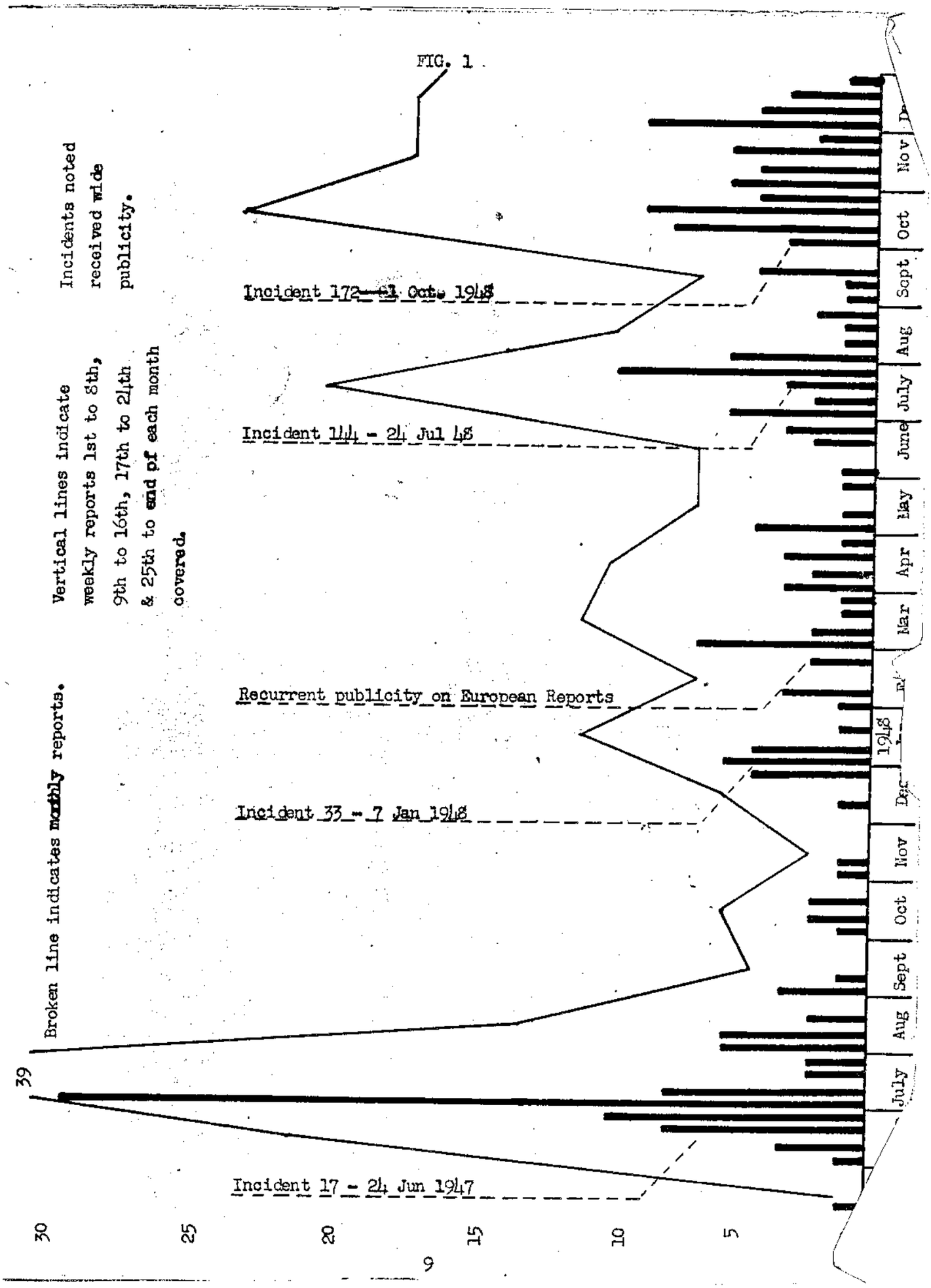
FIG. 1



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IX. Conclusions and Recommendations

A. There is no evidence that objects reported upon are the result of an advanced scientific foreign development; and, therefore, they constitute no direct threat to the national security. In view of this, it is recommended that the investigation and study of reports of unidentified flying objects be reduced in scope. Headquarters AMC will continue to investigate reports in which realistic technical applications are clearly indicated.

NOTE: It is apparent that further study along present lines would only confirm the findings presented herein.

1. It is further recommended that pertinent collection directives be revised to reflect the contemplated change in policy.

B. All evidence and analyses indicate that reports of unidentified flying objects are the result of:

1. Misinterpretation of various conventional objects.

2. A mild form of mass-hysteria and war nerves.

3. Individuals who fabricate such reports to perpetrate a hoax or to seek publicity.

4. Psychopathological persons.

It is, therefore, recommended that Conclusions 1 and 2 of this report, with sufficient supporting data, be declassified and made public in the form of an official press release. This action would aid in dispelling public apprehension, often directly attributable to the sensationalistic reporting of many of these incidents by the press and radio.

C. There are indications that the planned release of sufficient unusual aerial objects coupled with the release of related psychological propaganda would cause a form of mass-hysteria. Employment of these methods by or against an enemy would yield similar results.

In view of this, the Psychological Warfare Division and other governmental agencies interested in psychological warfare should be informed of the results of this study. These agencies should then coordinate in and provide further recommendations for public release of material relative to unidentified flying objects as recommended herein.

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APPENDIX A-1

Air Intelligence Information Report No. IR-115-48

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AF FORM 112—PART I
APPROVED 1 JUNE 1948

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COUNTRY	REPORT NO.	(LEAVE BLANK)
SWEDEN	IR 115-48	

AIR INTELLIGENCE INFORMATION REPORT

SUBJECT: Project "SIGN" AF-33165-1

AREA REPORTED ON	FROM (Agency)
Sweden	OAA-Sweden

DATE OF REPORT	DATE OF INFORMATION	EVALUATION
30 December 1948	29 December 1948	B-2

PREPARED BY (Officer)	SOURCE
Donald L. Hardy, Colonel, USAF	Swedish Defense Staff

REFERENCES (Control number, directive, previous report, etc., as applicable)
Source Control No. AMC-435

SUMMARY: (Enter concise summary of report. Give significance in final one-sentence paragraph. List inclosures at lower left. Begin text of report on AF Form 112—Part II.)

1. The Swedish Defense Staff has no proof that any unidentified flying objects, missiles or vehicles have passed over or near Sweden to date.

2. All reports of sightings in Sweden during the past year, irrespective of to whom they were submitted, have been funneled to a special section of the Defense Staff, where the sightings were plotted. In each case an exhaustive interrogation of the sighter followed, somewhat along the lines of the EEI for Project "SIGN". All evidence obtained of sightings was explicable in terms of astronomical phenomena.

3. In addition, 3 ground radar stations and 2 radar equipped destroyers cooperated in maintaining watch. The radar equipments were Swedish modified British sets of fairly short range and were not operated on a 24 hour basis; however, no unexplained sightings were made with this equipment.

4. Conclusion: Although the possibility exists that objects have traversed Sweden and its adjacent waters, no proof has been obtained to confirm such flight in any instance.

COMMENT: The cooperation of the Defense Staff in securing this information was undoubtedly given in an effort to emphasize their need for additional U.S. radar equipment. The Swedish Air Board had previously negotaited with the Bendis Corporation for 20 TPS-1a sets but had been refused an export license by our State Department. The members of the Defense Staff, to whom I talked, were eager to point out the good use to which such equipment could be put for both ourselves and the Swedes as instanced by our mutual interest in unidentifiable flying objects. However, I am convinced that our refusal to grant an export license for such equipment will do more good in implementing our national policy, as expressed in the National Security Council documents NSC 26/1, than would the information we might receive from the use of such equipment here.

/s/ Donald L. Hardy
DONALD L. HARDY
Colonel, USAF
Air Attache

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APPENDIX A-2

Air Intelligence Information Report No. IR-47-49

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AF FORM 112—PART I
APPROVED 1 JUNE 1948

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COUNTRY	REPORT NO.	(LEAVE BLANK)
SWEDEN	IR 47-49	

AIR INTELLIGENCE INFORMATION REPORT

SUBJECT: Guided Missile Activity Over Sweden

AREA REPORTED ON	FROM (Agency)
Sweden	OAA-Sweden

DATE OF REPORT	DATE OF INFORMATION	EVALUATION
2 March 1949	2 Maroh 1949	B-2

PREPARED BY (Officer)	SOURCE
H. B. Walsh, Major, USAF	Personal Contact

REFERENCES (Control number, directive, previous report, etc., as applicable)
R 605-48, Control No. DA-244

SUMMARY: (Enter concise summary of report. Give significance in final one-sentence paragraph. List inclosures at lower left. Begin text of report on AF Form 112—Part II.)

1. With reference to request dated 18 January 1949, Control No. DA-244, and revised by our cable, the following information is submitted:

a. Withdrawn (AFOIN Cable 51648 dated 21 February 1949)

b. Do the Swedes feel that the reported and unconfirmed incidents of guided missile sightings in recent years have any similarity to any such reports that were received in the days when Germany was conducting experiments with missiles in the Baltic area.

Answer: The Swedes feel that the guided missile sightings over Sweden have been natural phenomena only and they have no proof to discount such a statement.

c. What was Swedish official opinion to unconfirmed guided missile incidents prior to the time that debris of a V-2 missile was actually recovered in Sweden during German experimentation activities in the early part of World War II.

Answer: Swedish official opinion prior to the landing of a V-2 in Sweden, was that a certain number of the "missile sightings" were natural phenomena and a certain number were German fighters at high altitude enroute across Sweden to Norway. This view in fact remained the official opinion even after the V-2 missile landed in Sweden.

Assistant Air Attache Comment: The Sweden actually do not think very much about these reported incidents but attempt to play it up as much as possible to the U. S. Attaches in an effort to show their great need for radar. Continued interest, therefore, on our part towards the last reported incidents, only causes extreme embarrassment when the Swedes emphasize their radar request.

S/ H. B. Walsh
Major, USAF
Assistant Air Attache

APPROVED:

S/ DONALD L. HARDY
Colonel, USAF
Air Attache

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APPENDIX B

Prof. J. A. Hynek - Final Report, Project 364

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MAPPING, CHARTING AND RECONNAISSANCE RESEARCH LABORATORY

FINAL REPORT
PROJECT 364

PREPARED BY DR. J. ALLEN HYNEK
ASSISTED BY HARRIET R. SUMMERSON

THE OHIO STATE UNIVERSITY RESEARCH FOUNDATION
PROJECT NO. 364

for

U. S. AIR FORCE AIR MATERIEL COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, DAYTON, OHIO
Contract No. W33-038-1118

Columbus, Ohio,
April 30, 1949

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REPORT ON UNIDENTIFIED AERIAL AND CELESTIAL OBJECTS

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INTRODUCTION

Perhaps the most bizarre post-war phenomenon was the sudden barrage of reports, in the summer of 1947, describing unidentified objects in the sky. The incident which evidently triggered the volley was the now-famous account by Kenneth Arnold, in which he claimed to have seen "nine peculiar-looking aircraft" without tails, which flew in a chain-like line and "swerved in and out of the high mountain peaks." The handling of this incident by the press led to the unfortunate but descriptive term "flying saucer," which caught the public imagination. From that time on, there has been a fairly steady stream of similar reports, including some of "flying saucers" seen prior to the Arnold incident, which presumably otherwise would have gone unreported. (It is pertinent, therefore, to speculate whether any of the incidents would have been reported if Mr. Arnold had not made his observation.) Possibly, of course, we deal here with an excellent example of mass hysteria. In the interests of the defense of the country, however, it would be highly inadvisable to ignore the accounts, even though the chance be remote that they contain anything inimical to the nation's welfare. To this end, the present investigator, as an astronomer, was asked to review the data, to eliminate the patently astronomical incidents and to indicate which others might have such an explanation.

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GENERAL PROCEDURE

The method of the investigation was to examine a number of individual reports of unidentified aerial and celestial objects, to determine which of them could be explained on purely astronomical lines — that is, how many cases give evidence corresponding to descriptions of meteors, fireballs or bolides, comets, the planets, or even the sun or moon. Analysis was based entirely upon these reports, furnished by Project GRUDGE offices, with no attempt to make independent interrogation of witnesses, since this was not authorized under the contract. Nor was any attempt made to deduce explanations for the non-astronomical incidents, although hypotheses which appeared possible from the evidence were noted.

The subject reports number 244 and cover, approximately, the period from January, 1947, to January, 1949. They do not, however, correspond exactly to the number of separate incidents: sometimes, two or more reports refer to the same object observed by different people (although in general such cases have been handled by affixing letters to the incident numbers, thus: 33, 33a, 33b); occasionally, subdivisions of one number patently refer to separate phenomena. To avoid confusion, one report is being submitted by this investigator for each numbered incident, with cross references for identical or similar incidents, and separate discussions for those including more than one phenomenon.

Inasmuch as the avowed object of the investigation was

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solely to indicate the possible astronomical content of the reports at hand, in the primary analysis all evidence was accepted at face value, with no attempt to evaluate psychological factors. Frequently, however, when fairly liberal limits of tolerance were allowed, the report made sense physically, whereas the literal statement did not. (Whenever allowance was made for possible errors arising from subjective reporting, the fact was noted.) Furthermore, while some of the reports verge on the ludicrous, the attitude deliberately adopted was to assume honesty and sincerity on the part of the reporter. Among the general public, two attitudes toward "flying saucers" seem to be prevalent: one, that all are obviously illusions, hallucinations, or hoaxes; the other, that "there must be something to it." From the outset, this investigator has attempted to regard each report, insofar as is logically possible, as an honest statement by the observer, and to adhere to neither of the two schools of thought.

One further comment should be made: almost all of the data dealt with in this investigation are extremely tenuous. Many of the observers' reports are incomplete and inexact, and some are distinctly contradictory. Therefore, it has obviously been impossible to reach definite, scientific conclusions. Most explanations are offered in terms of probability, the degree of which is discussed in the individual reports, but can be indicated only generally in the statistics which follow.

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SUMMARY OF RESULTS

What, in particular, was gathered from the evidence concerning the astronomical character of the objects observed?

Of the 244 incidents submitted, 7 are excluded from all statistical reckoning: 1 is identified (in the subject report) as a hoax, 3 are duplicates, and 3 contain no information. In summarizing the findings in the remaining 237, two systems of classification are possible.

First, all incidents can be placed in one of two classes: 1) those which under no stretch of the imagination can be regarded as astronomical or extra-terrestrial (extra-terrestrial throughout this investigation refers solely to natural objects not originating on earth; it does not include "space ships from other planets"), and 2) those which either are definitely astronomical or can by suitable manipulation of the evidence be construed as such. The object here is to segregate all cases in which any vestige of astronomical origin is indicated. When this division is made, 111, or 47%, fall into the definitely non-astronomical category; or, conversely stated, 126, or 53%, might conceivably be considered (although the likelihood of their being so may be very small) as extra-terrestrial or astronomical in origin. The exact percentage is not important. The significant thing is that over 50% of the incidents might possibly be explained astronomically, if wide enough tolerances were allowed.

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The primary purpose here, however, is to segregate incidents which have a reasonable degree of certainty of astronomical origin. Therefore, in a second, more detailed breakdown, incidents are placed in one of three classes, according to the most probable interpretation seen in the evidence offered (with a minimum of allowance for subjective observation). Class 1 includes the astronomical incidents (with degree of probability indicated). The non-astronomical incidents are divided into two classes, because it appeared as the work progressed that they fell naturally thus: in some, the evidence at hand suggested a simple explanation; in others, it did not. Listings under class 2 are not to be considered in any way decisive (with the exception of a few which, according to subject reports, have been definitely identified); they are offered as suggestions.

A summary of the results of this breakdown is shown in the table on the following page.

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Class	Number of incidents	Approximate percentage
1. Astronomical		
a. High probability	42	18
b. Fair or low probability	33	14
Total	75	32
2. Non-astronomical but suggestive of other explanations		
a. Balloons or ordinary aircraft	48	20
b. Rockets, flares, or falling bodies	25	10
c. Miscellaneous (reflections, auroral streamers, birds, etc.)	13	5
Total	84	35
3. Non-astronomical, with no evident explanation		
a. Lack of evidence precludes explanation	30	13
b. Evidence offered suggests no explanation	48	20
	78	33

According to these findings, 78, or almost one-third, of the 237 incidents yet remain without an appropriate hypothesis for explanation. It is likely, of course, that with additional evidence a number of those included in class 3a would be easily explained (some of them, probably, astronomically). There are, however, at least 48 incidents in which the evidence, if correct as given, does not fit any simple explanation, and a number of these were reported by presumably well-qualified observers.

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COLLATERAL STUDIES

In relation to the investigation, besides the individual analyses of separate incidents, two brief studies were conducted:

Certain breakdowns of the subject reports were made, for the purpose of determining whether they include any prevalent characteristics; for example, incidents were grouped according to the date of occurrence, the hour, the presence or lack of noise, presence or lack of trail or exhaust, number of observers, general qualifications of observers (whether with appropriate training for accurate observation of aerial phenomena -- aviators, weather observers, etc.; or laymen). Although these classifications were helpful in spotting identical or similar incidents, they revealed no pertinent trends.

As a matter of general interest, the highly dubious works of Charles Fort (which, as has been stated in a previous report, are entirely reprehensible in viewpoint, but which do contain accounts of unusual aerial sightings over a period of many years) were examined, to check whether any of the reasonably authenticated incidents are similar to these recent reports. It was found, however, that Mr. Fort's accounts do not include sufficient specific evidence to reveal positive similarities, and the most that can be said of the works is that they indicate that strange objects in the sky have been reported long before this post-World War II flurry.

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RECOMMENDATIONS

This investigator would like to offer three recommendations, one in the general interest of the nation's airmen, and two as aids toward more effective investigation of the problem of unidentified aerial objects, if such work is continued:

First and foremost, it is definitely recommended that Air Forces personnel be apprised of simple astronomical phenomena like the recurrent brilliance of Venus and the characteristics of a typical fireball, so that much confusion and alarm and even possible tragic consequences can be avoided. If, as seems possible, Lieutenant Mantell met his death while attempting to chase down Venus, certainly the need for such basic education is great.

Second, if Project GRUDGE is authorized to extend its investigations, it might be found profitable to interrogate personally varied trained personnel concerning any untoward aerial objects which they may have observed in the past. Many competent observers might hesitate to take the initiative in reporting such phenomena for fear of ridicule or criticism, yet it is only from such people that accurate and meaningful descriptions can be obtained; reliance on the general public for such observations is almost certain to prove of little value. It would be of considerable aid to know whether (aside from the few cases reported here) experienced pilots, weather observers, and other "watchers of the sky" have ever found unidentified objects there. Even negative results would prove valuable, for they would offer evidence for the belief held by many that the unexplained

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incidents do not really involve tangible physical objects.

Third, if this type of investigation is to be continued, men with proved scientific and technical ability should be assigned to carry out the interrogations and investigations; it would be preferable either that the interrogator and technical specialist be the same person or, at least, that they work together in close harmony. Such an arrangement would aid greatly in lessening the incompleteness and inexactness of evidence which has thus far hindered the explanation of many "flying saucer" incidents.

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INCIDENT INDEX

1. Astronomical

a. High probability:
#26, 27, 30, 31, 32, 33, 34, 48, 49, 59, 60, 66, 69, 70, 94, 95, 96, 97, 98, 101, 102, 103, 104, 116, 119, 132, 136, 140, 147, 148, 158, 174, 184, 185, 187, 197, 203, 204, 208, 216, 219, 238.

b. Fair or low probability:
#19, 20, 23, 24, 28, 35, 36, 46, 50, 63, 67, 80, 82, 93, 100, 112, 120, 121, 129, 130, 144, 153, 166, 166, 167, 175, 192, 199, 202, 205, 220, 230, 240.

2. Non-astronomical but suggestive of other explanations

a. Balloons or ordinary aircraft:
#3, 11, 22, 41, 42, 53, 54, 73, 81, 83, 91, 92, 113, 114, 115, 126, 131, 138, 141, 145, 155, 156, 157, 159, 160, 161, 163, 169, 171, 173, 178, 180, 182, 188, 190, 194, 195, 196, 198, 200, 201, 209, 210, 217, 222, 235, 237, 239.

b. Rockets, flares or falling bodies:
#4, 5, 6, 7, 8, 9, 12, 13, 14, 15, 16, 25, 56, 65, 78, 106, 107, 108, 109, 133, 170, 211, 218.

c. Miscellaneous (reflections, auroral streamers, birds, etc.):
#39, 89, 123, 124, 128, 146, 164, 181, 189, 214, 221, 231, 234.

3. Non-astronomical, with no explanation evident

a. Lack of evidence precludes explanation:
#38, 44, 45, 47, 55, 57, 72, 86, 87, 88, 90, 99, 110, 117, 118, 125, 127, 137, 139, 149, 150, 177, 179, 191, 206, 212, 213, 229, 232, 233.

b. Evidence offered suggests no explanation:
#1, 2, 10, 17, 21, 29, 37, 40, 51, 52, 58, 61, 62, 64, 68, 71, 75, 76, 77, 79, 84, 105, 111, 122, 135, 151, 152, 154, 162, 168, 172, 176, 183, 186, 193, 207, 215, 223, 224, 225, 226, 227, 236, 241, 242, 243, 244, 134.

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Incident #1, 1c, 1d, 1e -- Muroc, California -- 8 July 1947

No astronomical explanation for this incident is possible.

It is tempting to explain the objects as ordinary aircraft observed under unusual light conditions, but the evidence of the "tight circle" maneuvers, if maintained, is strongly contradictory.

This incident must be judged with reference to other similar incidents, which probably have a common explanation.

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Incident #2, 2a -- Muroc, California -- 8 July 1947

No astronomical explanation is possible for this incident. The object's slow speed and apparent size suggest aircraft under unusual light conditions, but the tactics argue against this interpretation.

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Incident #3 -- Muroc, California -- 7 July 1947

There is no astronomical explanation of this incident. In this investigator's opinion, there is nothing in the evidence offered that is basically contradictory to the hypothesis of a weather balloon. Perhaps ascending currents of warm air over the desert could give the illusion that the object was oscillating.

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Incident #4 -- Rogers Dry Lake, California -- 8 July 1947

"There is no astronomical explanation for this incident.

Is there any definite reason why the object observed could not have been a bursted weather balloon?

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Incident #5 -- Portland, Oregon -- 4 July 1947

There is no astronomical explanation for this incident, nor for numerous others (#6, 7, 8, 9, 12, 13, 14, 15, 16) which occurred in and near Portland on the Fourth of July, 1947.

Besides being observed in the same vicinity and most of them at the same time, the objects seen have in common a round shape, "terrific" speed, abrupt tactics, and quick disappearance. Abrupt tactics certainly suggest that the objects were of a very light weight.

This investigator can offer no definite hypothesis, but in passing would like to note that these incidents occurred on the Fourth of July, and that if relatively small pieces of aluminum foil had been dropped from a plane over that area, then any one object would become visible at a relatively short distance. Even moderate wind velocities could give the illusion that fluttering, gyrating discs had gone by at great velocities. Various observers would not, of course, in this case have seen the same objects.

The above is not to be regarded as a very likely explanation but only as a possibility: the occurrence of these incidents on July 4 may have been more than a coincidence. Some prankster might have tossed such objects out of an airplane as part of an Independence Day celebration.

If these were aircraft of either known or unknown type,

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it would be difficult to explain their appearance over only one locality and at only one time, their apparent random motion, the lack of any sound or obvious propulsion method, and the lack of aerodynamic construction.

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Incident #6 -- Milwaukee, Oregon -- 4 July 1947

There is no astronomical explanation for this incident.

See report on incident #5.

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Incident #7 -- Portland, Oregon -- 4 July 1947

There is no astronomical explanation for this incident.

See report on incident #5.

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Incident #9 -- Portland, Oregon -- 4 July 1947

There is no astronomical explanation for this incident.

See report on incident #5.

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Incident #10 -- Boise, Idaho, 4 July 1947

There appears to be no astronomical explanation for this incident.

One minor lead is suggested: observation was made at the time of sunset, when light conditions are changing rapidly. Disappearance of the object might have occurred simply because of the changing visibility. It is the time of day when illusory effects are most likely to occur, and it might not be out of the question that the objects actually were other aircraft.

Despite these conjectures, no logical explanation for the incident seems possible at this time.

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Incident #11 -- Seattle, Washington -- 4 July 1947

There is no astronomical explanation for this incident.

The description answers that of a "hot air balloon," such as those launched at Fourth of July celebrations. There is nothing in the evidence given which is contradictory to this hypothesis.

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Incident #12 — Vancouver, Washington -- 4 July 1947

There is no astronomical explanation for this incident.

See report on incident #5.

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